



TE TĀHUHU O TE MĀTAURANGA

Ministry of Education

Hei Tautoko i te Marautanga Pāngarau

Te Hanga





# Wāhanga 1

## Ngā Kōrero Whānui



### He Kupu Whakataki

Ko te kaupapa ia o tēnei pukapuka, ko te āta whakaatu i ngā huatau matua o tēnei mea te hanga me ngā whanaketanga ako, e eke ai ā tātou ākongā i ngā taumata o tēnei wāhanga o te pāngarau. Āpiti atu ki tēnā, ko te whakaatu i ētahi ngohe e hāngai ana ki tēnā taumata ki tēnā taumata o te marautanga, me ngā hononga ki te Mahere Tau<sup>1</sup> me ngā Whanaketanga Pāngarau<sup>2</sup>.

main ideas

He mea nui tonu te hanga, arā ngā momo āhua ahu-2, ahu-3 hoki i roto i tō tātou ao. Ahakoa huri ki hea, kitea ai ngā momo hanga i te ao māori (pērā i te āhua o ngā momo rau rākau), i ngā waihangatanga hoki a te tangata (pērā i ngā tauira tukutuku a te Māori).

Number Framework

2-dimensional shapes

He pakari te whakaaro ataata o ētahi o tātou (tae atu hoki ki ā tātou ākongā), he pakari ake pea i te whakaaro tau. Nō reira ko te hanga tētahi kūaha hei whakaurunga atu mā ētahi ki te ao pāngarau me ōna mātauranga mīharo. He nui ngā akoranga ā-ringa e mātau haere ai te ākongā ki ngā hautau o tēnei mea te hanga. He maha hoki ngā tūhononga ki wāhanga ako kē, pērā i te toi, te whakairoiro me te hangarau. He nui ngā akoranga ka hua mai i te tākaro noa a te tamaiti, e pakari ai ōna

visual perception

graphics

<sup>1</sup> Tirohia: *Tē Poutama Tau, Pukapuka Tuatahi. Tē Mahere Tau*. Papaioea: He Kupenga Hao i te Reo (2011).

<sup>2</sup> Tirohia: *Whanaketanga Pāngarau: He aratohu mā te pouako*. Tē Whanganui-ā-Tāra: Tē Tāhuhu o te Mātauranga. (2010).

whakaaro āhuahanga. Hei tauira o ēnei momo tākaro, ko ngā momo poraka hangahanga pērā i te LEGO me ētahi atu, me ngā momo hanganga e taea ana ki ēnei poraka. Mā konei e mārama haere ai te tamaiti ki ngā momo āhua me ō rātou āhuatanga, pērā i te tapa, te rahi, te koki, te kokonga me ētahi atu.

geometric reasoning

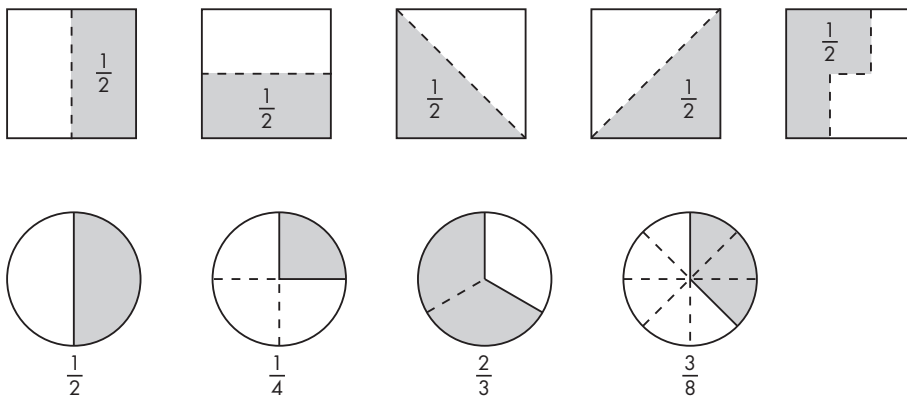


He maha ngā hononga o te hanga ki ērā atu whenu o te marautanga pāngarau. E whai ake nei ētahi tauira.

## Te Tau

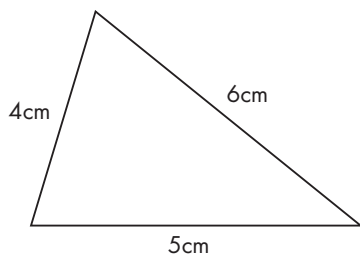
Ko te wāwāhi āhua hei whakatauiria i ngā hautau.

partition shapes

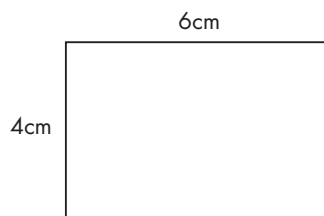


Ko te tātai i te paenga o ngā āhua:

perimeter

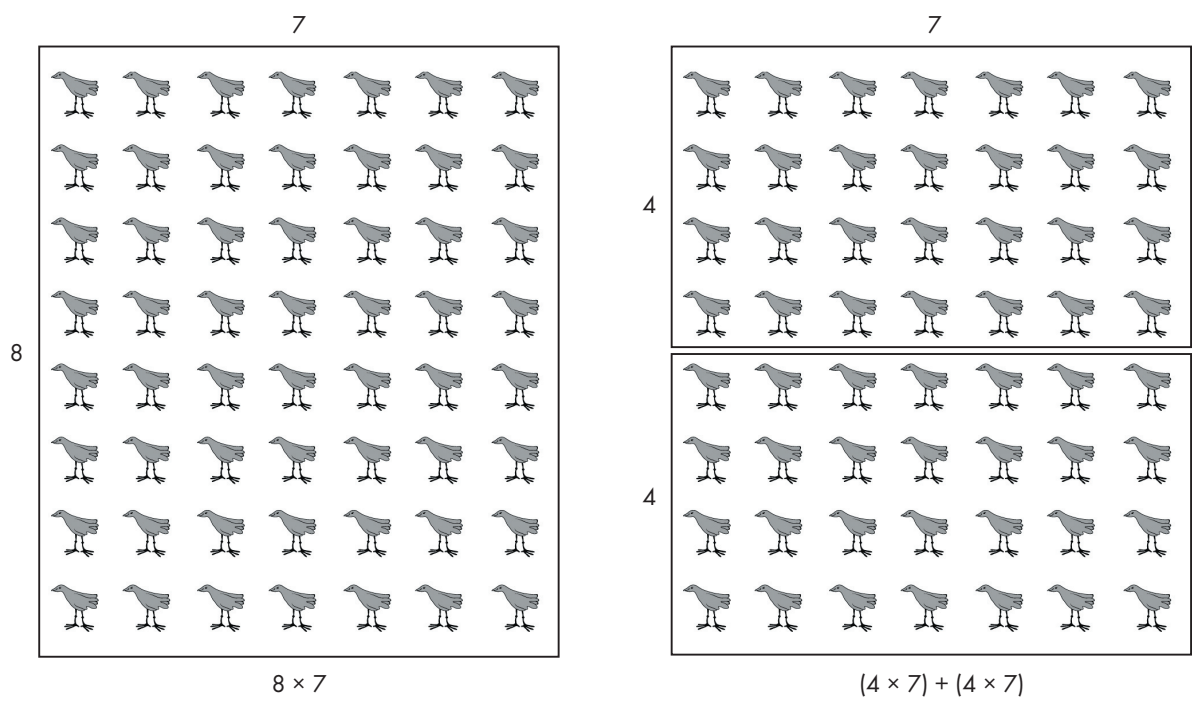


$$\begin{aligned} P &= 4 + 5 + 6 \\ &= 10 + 5 \\ &= 15\text{cm} \end{aligned}$$



$$\begin{aligned} P &= (6 + 4) \times 2 \\ &= 20\text{cm} \end{aligned}$$

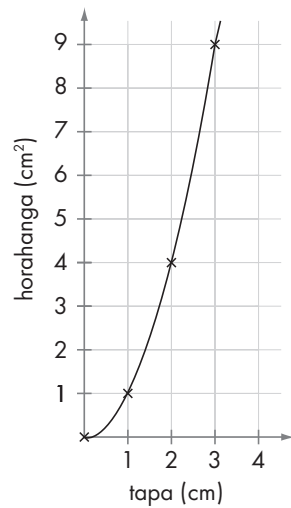
Ko te tātai horahanga o tētahi tapawhā hāngai hei whakatauiria i te whakareatanga.



### Te Taurangi

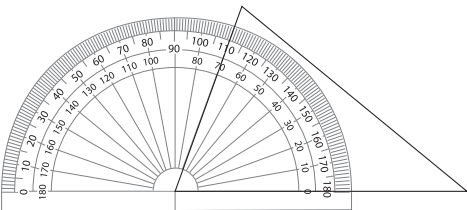
Ko te pānga kei waenganui i ngā tapa me te horahanga o tētahi tapawhā rite.

tapa (cm)	1	2	3	4	$t$	$\sqrt{h}$
horahanga (cm <sup>2</sup> )	1	4	9	16	$t^2$	$h$



### Te Ine

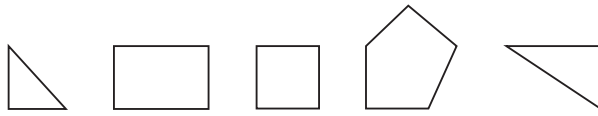
Ko te ine i ngā koki o ētahi tapatoru kia kitea ai ko te 180° te tapeke o ngā koki, ahakoa te āhua o te tapatoru.



## Te Tauanga

Ko te whakarōpū i ngā momo āhua me te whakamārama i ngā rōpū.

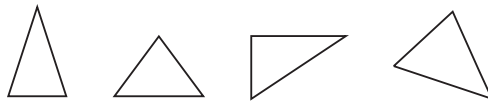
He āhua whai koki hāngai:



He āhua whai tapa kōpiko:



E toru ngā tapa:


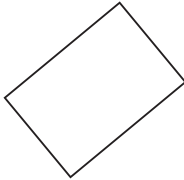
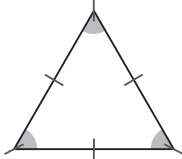




# Ngā Huatau Matua o te Hanga

Ko Pierre rāua ko Diana van Hiele ētahi kairangahau pāngarau, he Tatimana, nā rāua ngā huatau matua o te whakaako āhuahanga i tūhura, i rangahau i tērā rautau. Ko ā rāua whakakitenga hei tūāpapa mō te whakaako āhuahanga, ā, e whāia whānuitia ana puta noa i te ao<sup>3</sup>. E whai ake nei he whakarāpopototanga mō tā rāua raupapatanga ako i tēnei mea te āhuahanga:

main idea  
foundation  
learning sequence

Raupapatanga Ako	Whakamārama
0 Ataata Pitomata Pre-Recognition	Ka <u>tautohu</u> i ētahi āhua māmā, engari kāore e aro ki te hanga o ngā āhua. Ka kite noa iho i ētahi āhuatanga māmā, pēnā he kōpiko, he torotika rānei ngā tapa. Kāore pea e wehewehe i te tapawhā i te tapatoru.
1 Tautohu Ataata Visual	<p>Ka aro ki ngā rerekētanga whānui o ngā āhua, engari kāore e arohia ngā <u>āhuatanga āhuahanga</u> pēnei i te rahi o ngā <u>koki roto</u>. Ka honoa te hanga o ngā āhua ki ētahi āhuatanga o te taiao. Hei tauira, ki ētahi, he rerekē te āhua mēnā he tītaha, he huripoki rānei te noho o taua āhua:</p>
	<div><div>He tapawhā hāngai tēnei, nā te mea he ōrite ki te hanga o tētahi kūaha:</div><div></div></div> <div><div>Ehara tēnei i te tapawhā hāngai nā te mea kāore e rite ana ki te hanga o tētahi kūaha:</div><div></div></div>
2 Whakamārama Ataata Descriptive	<p>I tēnei kaupae kua tīmata te <u>whakaaro arorau</u>. Ka whakarōpūngia ngā āhua i runga i te hanga o aua āhua. Ka whakamārama i ngā āhuatanga āhuahanga o ngā rōpū. Hei tauira, e whā ngā tapa o ngā tapawhā rite katoa, he ōrite te roa o ngā tapa, he <u>koki hāngai</u> ngā kokonga katoa.</p> <p>Kāore e aro ki te pānga o tētahi rōpū āhua ki tētahi, pēnā he tapatoru waerite hoki ngā tapatoru rite katoa:</p>
	

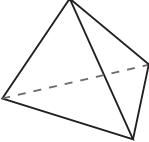
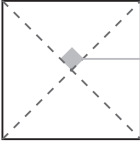
identify

geometric properties  
internal angles

logical thinking

right angle

<sup>3</sup> Hei tauira, tirohia ngā pukapuka nei:  
*Elementary and Middle School Mathematics*, nā John Van de Walle. I whakaputaina e Pearson Educational i te tau 2007.  
Book 9 Numeracy Professional Development Project. *Teaching Number through Measurement, Geometry, Algebra and Statistics*. I whakaputaina e Te Tāhuhu o te Mātauranga i te tau 2008.

<p>3 Pānga Ataata Relational</p>	<p>He <u>nahanaha</u> te <u>tautohu</u> me te whakarōpū i ngā āhua i runga i te pānga o tētahi āhua ki tētahi me ōna <u>āhuatanga āhuahanga</u>. Hei tauira, mēnā he tapatoru rite ngā mata katoa o tētahi matarau, he matawhā rite tērā:</p> 	<p>systematic, identify geometric properties</p>
<p>4 Ataata Arorau Formal Deduction</p>	<p>He <u>ōkawa</u>, he <u>arorau</u> te titiro ki ngā pānga kei waenganui i ngā rōpū āhua. Hei tauira, i ngā kaupae tōmua, nā te titiro noa ki ngā <u>hauroki</u> o tētahi tapawhā rite i mōhioitia ai e 90° te koki <u>haukoti</u>. I tēnei taumata ka āta <u>taunaki</u> i ērā momo āhuatanga.</p>  <p>koki haukoti</p>	<p>formal, logical  diagonal intercept, evidence</p>
<p>5 Pūnaha Ataata Systematic</p>	<p>I tēnei taumata hōhonu ka waihanga te tangata i ngā <u>pūnaha pāngarau</u> e noho ana hei tūāpapa mō ngā momo tauira āhuahanga.</p>	<p>mathematical system</p>

Kāore e eke ki tua atu i te Raupapatanga i te mahere i runga nei, ngā akoranga e hāngai ana ki te kura tuatahi (tae atu ki te taumata 5 o te marautanga).

I te nuinga o te wā, he māmā ake te aro ki ngā āhua ahu-rua, (pērā i ngā momo tapawhā me te porowhita) i ngā āhua ahu-toru (pērā i te koeko, te poi me te rango).



## Ngā Huatau Matua o te Hanga me ngā Taumata Marautanga

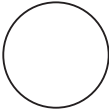
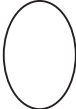



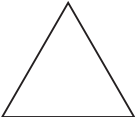


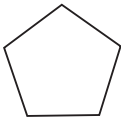
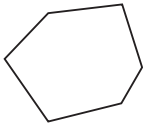
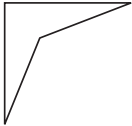


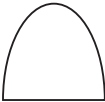

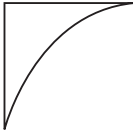

Taumata 1	Ko te <u>aronga</u> matua i tēnei taumata, ko te <u>wehewehe</u> i ngā <u>hanga</u> māmā i runga i te <u>āhua</u> o te hanga. Ko te maha o ngā tapa, ko te rahi, ko te tae, ko te torotika, te kōpiko rānei o ngā tapa ētahi āhuatanga hei whakawehewehe i ngā hanga māmā. Ko te reo <u>ōpaki</u> o ia rā hei whakamārama i ngā hanga, pēnā he mōmona, he tūpuhi, he rite ki te wīra, he koi ngā kokonga. Kua tīmata te whakamahi i ētahi kupu āhuahanga pēnei i te tapa, te torotika, te kōpiko, me ētahi atu. Ka whai wāhi atu ki ngā <u>āhua ahu-2</u> me ngā āhua ahu-3.	sort, object, appearance  informal  2-dimensional shapes
Taumata 2	Ko te aronga matua i tēnei taumata, ko te <u>wehewehe</u> i ngā <u>hanga</u> i runga i ō rātou <u>āhuatanga āhuahanga</u> . Ka tino aro ki ngā wāhanga o ngā hanga, pēnei i ngā tapa, ngā kokonga, me ngā mata. Kua tīmata te whakamahi i ngā ingoa o ētahi rōpū āhua, pēnei i te tapatoru, te tapawhā me te mataono.	sort object, geometrical properties
Taumata 3	I tēnei taumata kua mōhio ki ngā ture hei <u>tautohu</u> i ētahi rōpū āhua. Hei tauira, e whā ngā tapa torotika, e whā hoki ngā koki hāngai o tētahi tapawhā hāngai. Ko te maha o ngā tapa, ko te <u>hangarite</u> , ko te <u>whakarara</u> te <u>hāngai</u> rānei o ngā tapa, ko te āhua o ngā koki ētahi āhuatanga hei tautohu i ngā rōpū āhua.	identify  symmetry, parallel, perpendicular
Taumata 4	Ko te aronga matua i tēnei taumata, ko te tuhi <u>hoahoa ahu-2</u> hei whakaatu āhua ahu-3. Hei tauira, ko te tuhi i ngā momo <u>tirohanga</u> ki tētahi hanga ahu-3, ko te <u>hoahoa inerite</u> , ko te tuhi me te waihanga <u>raumata</u> . I konei kua mōhio ki te āhua o ngā mata o tētahi āhua ahu-3, te hono o tētahi mata ki tētahi, me ngā pānga kei waenganui i ngā tapa, ngā kokonga me ngā mata.	2-dimensional diagram  view, isometric diagram net
Taumata 5	I tēnei taumata, kua tīmata te whakamahi i ngā āhuatanga āhuahanga hei <u>tātai</u> i ngā tapa me ngā koki o tētahi āhua. Hei tauira, ko ngā <u>koki roto</u> me ngā koki waho o tētahi taparau, ko ngā koki ka hua mai i te rārangi e <u>haukotu</u> ana i ētahi rārangi <u>whakarara</u> e rua, ko ngā <u>ōwehenga pākoki</u> māmā hoki.	calculate internal angle intersect parallel, trigonometric ratio





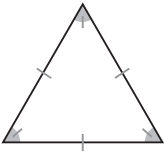

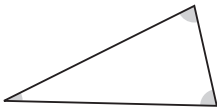
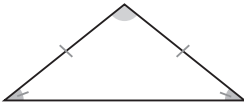
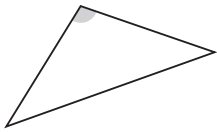
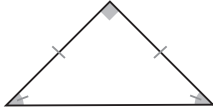
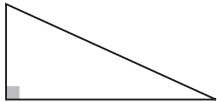
# He Whakarōpūtanga Āhua Ahu-Rua

He papatahi katoa ngā āhua ahu-2:

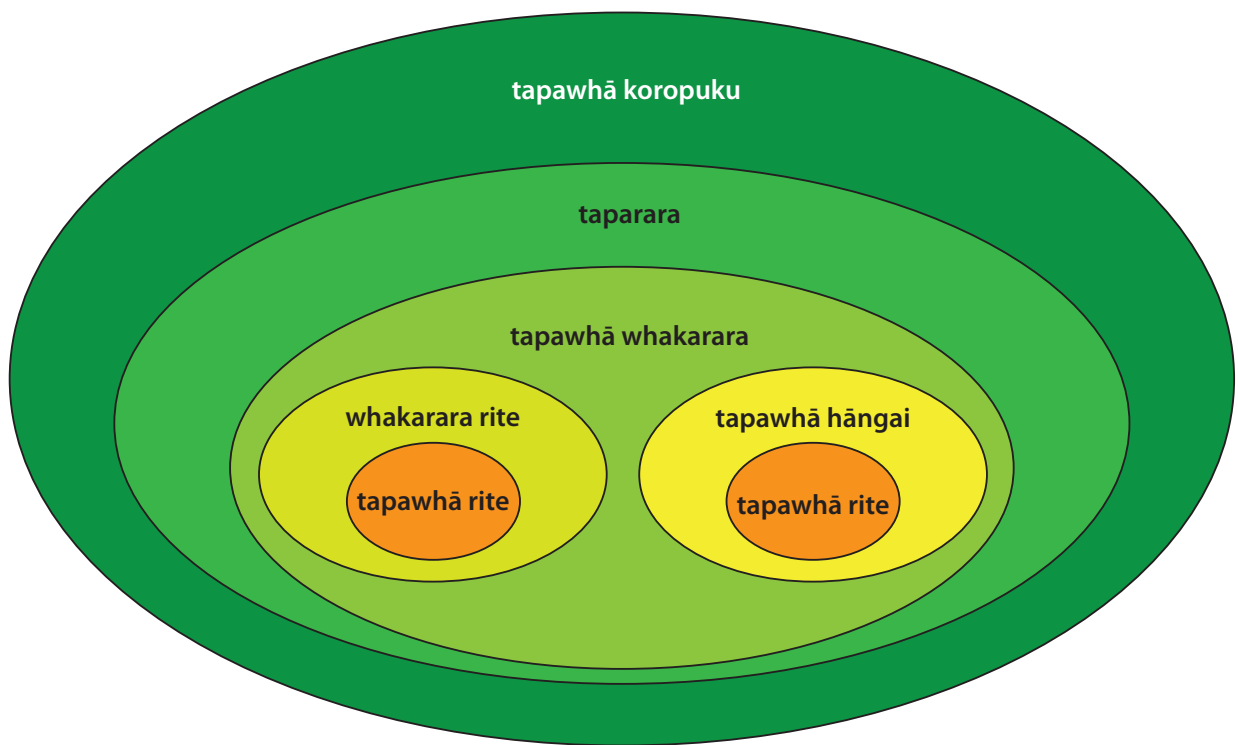
	He koropuku te āhua	He kōpapa te āhua
He kōpiko ngā tapa	<div> porowhita</div> <div> pororapa</div> <div> porohema</div>	<div> kape</div> <div></div>
He torotika ngā tapa (ka kīia he taparau)	<div> tapatoru rite</div> <div> tapawhā rite</div> <div> tapawhā hāngai</div> <div> taparima rite</div> <div> tapaono hikuwaru</div>	<div> pere tapawhā</div> <div> tapaono hikuwaru</div>
He torotika, he kōpiko hoki ngā tapa	<div> porowhita haurua</div> <div> pororapa haurua</div> <div></div>	<div></div> <div></div>



# He Tauira Whakarōpūtanga Tapatoru

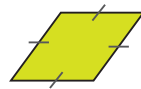
	tapatoru rite (e 3 ngā koki ōrite)	tapatoru waerite (e 2 ngā koki ōrite)	tapatoru hikuwaru (karekau he koki ōrite)
tapatoru koki tāhapa (he tāhapa ngā koki katoa)			
tapatoru koki hāpūpū (kotahi te koki hāpūpū)			
tapatoru hāngai (kotahi te koki hāngai)			

## He Tauira Whakarōpūtanga Tapawhā



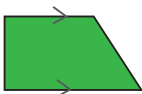
### tapawhā koropuku

- e whā nga tapa torotika
- he koropuku ngā tapa katoa



### whakarara rite

- he tapawhā whakarara
- he ōrite te roa o ngā tapa katoa



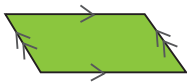
### taparara

- ko te iti iho kia kotahi te takirua tapa whakarara



### tapawhā hāngai

- he tapawhā whakarara
- he koki hāngai ngā kokonga katoa



### tapawhā whakarara


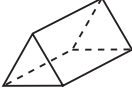
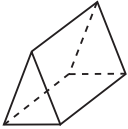
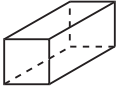

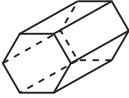
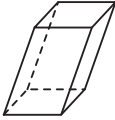



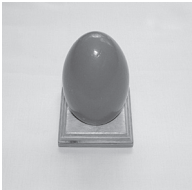






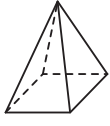



- kia rua ngā takirua tapa whakarara



### tapawhā rite

- he tapawhā whakarara
- he tapawhā hāngai (e 90° ngā koki katoa)
- he whakarara rite (he ōrite te roa o ngā tapa katoa)

# He Whakarōpūtanga Āhua Ahu-Toru

He kōpiko katoa ngā mata	He papatahi ngā mata katoa (he matarau)	He kōpiko, he papatahi ngā mata
 <p>poi</p>	<p><b>Ngā momo poro</b></p> <div>   </div> <div>   </div> <div>   </div>	 <p>koeko-porowhita</p>  <p>rango</p>  <p>poi-haurua</p>
 <p>poi rapa</p>	<p><b>Ngā momo matarau rite</b></p> <div>   </div> <div>   </div>	
 <p>poi hema</p>	<p><b>Ngā momo koeko</b></p> <div>   </div> <div>   </div>	
 <p>tarawhiti</p>		

## He Tauira Mahere mō te Hanga

Taumata 1	Te Mātauranga Hanga	Te Whakaoti Rapanga Hanga	Te Reo Matatini o te Hanga
Whanaketanga 1a	<p>Ka tautohu i ētahi āhuatanga māmā o tētahi āhua ahu-2, o tētahi āhua ahu-3 rānei:</p> <ul style="list-style-type: none"> <li>• ōna tapa;</li> <li>• ōna mata;</li> <li>• ōna kokonga;</li> <li>• te kōpiko, te torotika rānei o ōna tapa me ōna mata.</li> </ul> <p>Ka mōhio ki ēnei momo rārangi:</p> <ul style="list-style-type: none"> <li>• rārangi torotika;</li> <li>• rārangi kōpiko.</li> </ul>	<p>Ka whakatairite, ka whakarōpū āhua i runga i ngā āhuatanga māmā pēnei i ēnei:</p> <ul style="list-style-type: none"> <li>• te maha o ngā tapa, o ngā mata, o ngā kokonga rānei;</li> <li>• te mātotoru;</li> <li>• te rahi;</li> <li>• te koi o ngā kokonga;</li> <li>• te torotika, te kōpiko rānei o ngā tapa (me ngā mata).</li> </ul>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• tapa;</li> <li>• mata;</li> <li>• kokonga;</li> <li>• kōpiko;</li> <li>• rārangi;</li> <li>• torotika.</li> </ul> <p>Ka whakamārama i ngā āhua māmā i āna ake kupu.</p>
Whanaketanga 1e	<p>E mōhio ana ki te pūmautanga o tētahi āhua, ahakoa te huri o te noho mai o taua āhua.</p> <p>Ka mōhio ki ēnei momo rārangi:</p> <ul style="list-style-type: none"> <li>• rārangi poutū;</li> <li>• rārangi huapae.</li> </ul> <p>Ka mōhio ki ngā āhua ahu-2 nei:</p> <ul style="list-style-type: none"> <li>• tapawhā, tapawhā hāngai, tapawhā rite;</li> <li>• tapatoru;</li> <li>• porowhita.</li> </ul> <p>Ka mōhio ki ngā āhua ahu-3 nei:</p> <ul style="list-style-type: none"> <li>• pouaka;</li> <li>• poi;</li> <li>• rango.</li> </ul>	<p>Ka tautohu i ngā āhua ahu-2 māmā me ngā āhua ahu-3 māmā e kitea mai ana i te taiao.</p> <p>Ka hanga whakaahua ā-hinengaro o ngā āhua māmā.</p> <p>Ka whai, ka hoatu tohutohu māmā mō te tuhi i tētahi āhua.</p>	<p>Ka mōhio ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• taparau;</li> <li>• matarau;</li> <li>• tapatoru;</li> <li>• tapawhā rite;</li> <li>• tapawhā hāngai;</li> <li>• porowhita;</li> <li>• pouaka;</li> <li>• poi;</li> <li>• rango;</li> <li>• huapae;</li> <li>• poutū.</li> </ul> <p>Ka whakaputa kōrero mō ngā āhuatanga rerekē me ngā āhuatanga ōrite o ētahi āhua.</p>

Taumata 2	Te Mātauranga Hanga	Te Whakaoti Rapanga Hanga	Te Reo Matatini o te Hanga
Whanaketanga 2a	<p>Ka mōhio ki ngā momo tapatoru nei:</p> <ul style="list-style-type: none"> <li>• te tapatoru hikuwaru;</li> <li>• te tapatoru waerite;</li> <li>• te tapatoru rite;</li> <li>• te tapatoru hāngai.</li> </ul> <p>Ka kite ā-karu i ngā koki ōrite o tētahi taparau.</p> <p>Ka mōhio ki ēnei āhuatanga:</p> <ul style="list-style-type: none"> <li>• rārangi whakarara;</li> <li>• rārangi pūtahi;</li> <li>• rārangi hāngai;</li> <li>• koki hāngai;</li> <li>• koki iti ake i te koki hāngai;</li> <li>• koki nui ake i te koki hāngai;</li> <li>• haurōki.</li> </ul>	<p>Ka tuhi ā-ringa, ka wāwāhi āhua ahu-2 i runga i te hangarite o aua āhua.</p> <p>Ka whai, ka hoatu tohutohu mō te tuhi i tētahi āhua.</p>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• hikuwaru;</li> <li>• waerite;</li> <li>• rite;</li> <li>• koki hāngai;</li> <li>• hangarite;</li> <li>• whakarara;</li> <li>• haurōki;</li> <li>• pūtahi;</li> <li>• rārangi hāngai.</li> </ul> <p>E mōhio ana ki ngā tohu hei whakaatu koki hāngai, tapa ōrite, koki ōrite, rārangi whakarara hoki.</p> <p>E mōhio ana ki te tikanga mō te whakaingoa i tētahi koki.</p> <p>Ka whakamārama i te hangarite o tētahi āhua mā mā i āna ake kupu.</p>
Whanaketanga 2e	<p>Ka mōhio ki ngā momo matarau nei:</p> <ul style="list-style-type: none"> <li>• te poro tapawhā;</li> <li>• te poro tapatoru;</li> <li>• te mataono rite;</li> <li>• te koeko;</li> <li>• te koeko tapawhā;</li> <li>• te koeko tapatoru.</li> </ul>	<p>Ka whakapiri i ētahi āhua mā mā (pēnei i te mataono rite) hei hanga tauira.</p> <p>Ka kite ā-hinengaro i te āhua o ngā tapanga āhua ahu-3.</p> <p>Ka whakamahi i ngā taputapu tā (pērā i te tāporowhita me te rūri), hei tuhi koki hāngai, hei tuhi taparau mā mā.</p>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• poro;</li> <li>• poro tapawhā;</li> <li>• poro tapatoru;</li> <li>• mataono rite;</li> <li>• koeko;</li> <li>• koeko tapawhā;</li> <li>• koeko tapatoru;</li> <li>• tihi;</li> <li>• pūtāke.</li> </ul> <p>Ka whakamārama i ngā momo matarau mā mā i āna ake kupu.</p>

Taumata 3	Te Mātauranga Hanga	Te Whakaoti Rapanga Hanga	Te Reo Matatini o te Hanga
Whanaketanga 3a	<p>Ka mōhio ki ngā āhuatanga āhuahanga o ngā rōpū taparau me ngā rōpū matarau.</p> <p>Hei tauira:</p> <ul style="list-style-type: none"> <li>• E rua ngā tapa whakarara takirua o tētahi tapawhā hāngai;</li> <li>• E rua (e toru rānei) ngā koki ōrite o tētahi tapatoru waerite.</li> </ul>	<p>Ka whakarōpū āhua i runga i ngā āhuatanga āhuahanga o aua āhua, me te whakamārama anō i ngā rōpū.</p> <p>Ka tautohu, ka whakatairite, ka tātari i ngā āhuatanga āhuahanga o ngā āhua ahu-2 me ngā āhua ahu-3.</p> <p>Ka hanga raumata o ētahi āhua ahu-3 māmā:</p> <ul style="list-style-type: none"> <li>• mataono rite;</li> <li>• poro tapawhā hāngai;</li> <li>• koeko tapawhā hāngai.</li> </ul>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• raumata.</li> </ul>
Whanaketanga 3e	<p>Ka mōhio ki ngā momo 'ōrite' o ētahi hanga e rua:</p> <ul style="list-style-type: none"> <li>• ōrite;</li> <li>• ōrite te āhua;</li> <li>• ōrite te rahi.</li> </ul> <p>Ka kite ā-karu mēnā he ōrite te āhua o ētahi hanga e rua.</p>	<p>Ka hanga, ka whakarahi, ka whakaiti raumata hei hanga i ngā momo matarau.</p> <p>Hei tauira:</p> <ul style="list-style-type: none"> <li>• Ka whiriwhiria te raumata o tētahi poro tapawhā hāngai, kia iti rawa te horahanga mata, engari kia rahi rawa te rōrahi.</li> </ul> <p>Ka tūhura i te rōpinepine o ētahi taparau.</p>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• ōrite;</li> <li>• ōrite te rahi;</li> <li>• ōrite te āhua;</li> <li>• rōpinepine.</li> </ul>



Taumata 4	Te Mātauranga Hanga	Te Whakaoti Rapanga Hanga	Te Reo Matatini o te Hanga
Whanaketanga 4a	<p>Ka mōhio ki ngā tikanga o te taurahi o ētahi taparau he ōrite te āhua.</p> <p>Ka mōhio ki ngā tikanga koki roto nei:</p> <ul style="list-style-type: none"> <li>• 180° te tapeke o ngā koki roto o tētahi tapatoru;</li> <li>• 360° te tapeke o ngā koki roto o tētahi tapawhā.</li> </ul> <p>Ka kite ā-karu i ngā momo tirohanga ki tētahi āhua ahu-3 māmā.</p> <p>Ka mōhio ki ngā āhuatanga āhuahanga e rōpinepine ai ētahi āhua ahu-2.</p>	<p>Ka tūhura i te tātaitanga o ngā koki roto o ngā momo taparau.</p> <p>Ka whakamahi i ngā tikanga pānga riterite hei tātai i ngā tapa o ētahi taparau he ōrite te āhua.</p> <p>Ka tuhi i ngā momo tirohanga ki tētahi āhua ahu-3 māmā.</p> <p>Ka tuhi, ka hanga rānei i tētahi āhua ahu-3, mai i ōna momo tirohanga ahu-2.</p> <p>Ka waihanga, ka tuhi rōpinepine.</p> <p>Ka tuhi hoahoa āwhata.</p>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• taurahi,</li> <li>• ōwehenga,</li> <li>• koki roto,</li> <li>• āwhata,</li> <li>• tirohanga runga,</li> <li>• tirohanga mua,</li> <li>• tirohanga matau ...</li> </ul>
Whanaketanga 4e	<p>Ka mōhio ki ngā tikanga koki. Hei tauira:</p> <ul style="list-style-type: none"> <li>• koki tāhapa;</li> <li>• koki hāpūpū;</li> <li>• koki rārangi;</li> <li>• koki huripū;</li> <li>• koki rāwaho;</li> <li>• koki whakahāngai;</li> <li>• koki whakarārangi;</li> <li>• koki whakahuripū.</li> </ul>	<p>Ka tātai i ngā koki o ētahi rārangi pūtahi.</p> <p>Ka tūhura i te pānga kei waenganui i ētahi āhuatanga o ētahi āhua ahu-2.</p> <p>Hei tauira:</p> <ul style="list-style-type: none"> <li>• te pānga kei waenganui i te pūtoro me te paenga o tētahi porowhita;</li> <li>• te pānga kei waenganui i te maha o ngā tapa me te maha o ngā hauraki o tētahi taparau.</li> </ul>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• koki tāhapa;</li> <li>• koki hāpūpū;</li> <li>• koki rārangi;</li> <li>• koki huripū;</li> <li>• koki rāwaho;</li> <li>• koki whakahāngai;</li> <li>• koki whakarārangi;</li> <li>• koki whakahuripū.</li> </ul>

Taumata 5	Te Mātauranga Hanga	Te Whakaoti Rapanga Hanga	Te Reo Matatini o te Hanga
Whanaketanga 5	<p>Ka mōhio ki ngā tikanga o ngā koki ka hua mai i te rārangi e haukoti ana i ētahi rārangi whakarara:</p> <ul style="list-style-type: none"> <li>• koki tauaro;</li> <li>• koki tauroto;</li> <li>• koki taurite;</li> <li>• koki tauwhiti.</li> </ul>	<p>Ka tūhura, ka whakamārama i te pānga o ngā koki ka hua mai i te rārangi e haukoti ana i ētahi rārangi whakarara.</p> <p>Ka tūhura, ka whakaputa, ka whakamahi ture hei tātai āhuatanga āhuahanga. Hei tauira:</p> <ul style="list-style-type: none"> <li>• te pūtoro o tētahi porowhita;</li> <li>• te hauroki o tētahi tapawhā hāngai;</li> <li>• te rārangi weherua o tētahi tapatoru rite.</li> </ul>	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> <li>• koki tauaro;</li> <li>• koki tauroto;</li> <li>• koki taurite;</li> <li>• koki tauwhiti;</li> <li>• tāroa.</li> </ul>